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ABSTRACT

A workplace literacy partnership project was conducted to upgrade the basic skills and productivity of 287 hourly wage earners of Winamac Spring Company (WSC) in Indiana. WSC paid employee wages for up to 24 hours of training and provided a classroom facility. El-Tip-Wa Adult Learning Center instructional staff provided basic skills training using work-related materials. Curriculum and learning modules were developed on an ongoing basis. Staff continually solicited feedback concerning employees' attitudes toward training by surveys and documented skill improvements through criterion-referenced tests. These tests showed measurable improvement in worker acquisition of skills taught. A majority of workers, supervisors, and technical personnel felt that job performance and worker attitudes improved. An external evaluation used the following methods: participant questionnaires; interviews with WSC managers, supervisors, and technical personnel and with instructional personnel and community representatives; pre-post test data; review of project materials; and analysis of productivity and cost information. Results showed the following: substantial gains in short-term mastery of course material; limited improvement in job performance; positive trends in productivity and cost measures; negligible impact on employee attitudes; and substantial commitment of WSC to the project. (Appendixes include a learning module on introduction to measurement and linear measurement and the external evaluation report.) (YLB)

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FINAL PERFORMANCE REPORT

PROJECT WINAMAC

A Workplace Literacy Partnership

between

Winamac Spring Company
Hwy. 14 West, P. O. Box 150
Winamac, IN 46996

and

El-Tip-Wa Adult Learning Center
401 Tanguy St., P. O. Box 1168
Logansport, IN 46947

David Miller, Project Coordinator
Pamela Rausch, Instructional Assistant
Kaye Beall, Adult Education Director
Joseph K. Holmes, Safety and Training Director

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PROJECT WINAMAC

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Attachments

External Evaluation of Project Winamac

Curriculum Module on Linear Measurement

1. Compare actual accomplishments to the objectives contained in the approved application.

The project was a workplace literacy partnership between Winamac Spring Company and El-Tip-Wa Adult Learning Center. The purpose was to upgrade the basic skills, and therefore, the productivity of the hourly wage earners at Winamac Spring Co.. Winamac Spring Company paid employee wages for up to twenty-four hours of training in addition to providing a classroom facility. El-Tip-Wa instructional staff provided basic skills training using work-related materials.

The goal of Project Winamac was to provide continuing and new hourly wage earners with the necessary training for them to be able to: comprehend and interpret the Quality Manual, apply statistical process control, complete required forms, and implement safety procedures. It was hoped that this training will instill the employees with better work values in addition to upgrading basic skills.

Objective 1 To assess the training needs of individual workers.

Accomplishment

An assessment by General Motors and Winamac Spring department heads in which job task analysis were completed was used as a part of the process to develop an overall training plan for the hourly employees. According to the plan, the workers should, after training, be able to use the Quality Manual as a reference tool; solve basic math problems using whole numbers, fractions and decimals; measure using several measuring tools; use a calculator for figuring averages and variances; demonstrate the use of statistical process control in X & R

Charting; compare and contrast metals and heat treating; and demonstrate various safety measures. The advisory board, supervisors, and employees were surveyed so that these training needs could be prioritized.

The Appraisal Tests for Reading and Math of the Employability Competency System (ECS) from the Comprehensive Adult Student Assessment System (CASAS) were administered. These results were used for basic skills levels even though worker resistance to testing precluded the intent of comparing pre- and post-test scores on the Survey Forms. Pre-/post-tests for each learning module were used to continually evaluate needs and assess progress. Individual educational plans were developed for employees who signed up for voluntary basic skills classes.

Voluntary classes for basic academic skills using computer-assisted-instruction, GED preparation, CPR/first aid, and financial planning were also offered. The GED and life skills classes were organized by project staff, but not implemented with project monies. These classes were offered in response to the survey made of the workers.

Objective 2 To construct a training plan.

Accomplishment

Curriculum and learning modules were developed on an on-going basis. As lessons developed materials were purchased and customized to the workplace or written by the instructional staff in consultation

with company technicians and supervisors. Curriculum modules containing the lesson objectives, pre-test, needed materials, the lesson(s), and post-test were packaged for continued use. Modules were developed for general, visual, lifting, hearing, and lockout safety; linear measurement; statistical process control; use of calipers; hazardous communication; blueprint reading; quality manual; and heat treat. The instruction utilized these topics as the functional context for the basic skills of reading, mathematics, and problem-solving.

As the employees were receiving paid released time for training, the training sessions were mandatory. The workers were released by lines to attend sessions at the beginning of each shift. Class sizes were 16 to 20 workers.

The training room was also open for employees to come in for basic skills instruction on a voluntary basis without pay before or after work hours. Individualized educational plans were developed for the voluntary instruction.

Counselors at the local Kankakee Valley Workforce Development center provided career and educational counseling for those participants who desired assistance. This was arranged on a contractual basis.

Objective 3 To implement the training.

Accomplishment

Each employees attending training sessions every three weeks. Most sessions were conducted in a large group setting with

individualized assistance by staff. Competency-based instruction was evidenced by the components of the learning modules and the teaching sequence of theory, modelling, and practice followed by demonstrated mastery. Comparisons of pre-/post-test scores and employee reactions to the instruction are found in the attached external evaluation; these findings show success.

Objective 4 To evaluate and revise the training.

Accomplishment

The instructional staff continually solicited feedback concerning the employees' attitudes toward training by surveys and documented skill improvements through criterion-referenced tests. Adjustments in the instructional content and methods were made. The Advisory Board also monitored the project and made suggestions for improvements and changes. New training needs were also identified in the same ways.

Absenteeism, accident, and turnover rates before and after the training were compared by the external evaluator. The results are found in the attachment. During the employees' interviews, impact on attitudes and personal growth was assessed.

2. Refer to the schedule of accomplishments and their target dates contained in the approved application and give reasons for slippage in those cases where established objectives were not met. Include any corrective measures taken to correct slippage

The project began its instructional cycle in October 1990, a month later than anticipated. The plant was sold to another owner which supported the training project. However, some decisions affecting the set up of the training were delayed during the transition period. Contract negotiations were held shortly thereafter, again delaying the start-up. The additional time allowed for the formation of an Advisory Board, the completion of a new training room, and additional staff development.

The plan to develop individualized educational plans for all participants was not implemented. Individual assessments were not available due to employee apprehension and resistance. Also, large group instructional strategies were more appropriate as attendance was mandated for all employees on company time. Individual educational plans were developed for the employees who volunteered to attend training on their own time.

The project was extended for three months to continue voluntary training, to develop modules for newly hired employees, and to complete the curriculum modules.

3. For projects involving direct services to individuals, identify the number and characteristics of project participants who completed planned project activities and of those who did not, and the outcomes achieved by participants who completed project activities.

The hourly wage earners were the target population for this project; the minimum education level for employment at Winamac Division is tenth grade. Two hundred eighty-seven employees participated in the mandatory basic skills classes at the one site, Winamac Spring Company. Thirteen persons received voluntary, individualized instruction. The workforce was reduced to 193 by May, 1991.

Mean Age of the Participants		31
Race/ethnicity of Participants	White	283
	Black	1
	Hispanic	3
Sex of Participants	Male	286
	Female.	1
Number of Years Participants Been With Company	0-5	192
	6-10	34
	11-15	22
	16 or more	39.

Criterion referenced tests administered before and after instructional units showed that participants measurably improved in the acquisition of the skills taught in the unit. In the surveys of participants and interviews with supervisors and technical personnel the majority of responders felt that job performance and worker attitudes improved. Productivity and cost indicators such as

absenteeism, turnover rates, accident frequency and severity, and input-output ratios were also monitored by the company throughout the project; overall, the trends were positive. However, caution should be used in attributing this positive trend to the project as other factors also contributed to the improvement. The outcomes achieved by the participants are described in the attached external evaluation report. The total number of contact hours provided was 3514.

4. Report on any dissemination activities.

The following items were disseminated to the United States Department of Education, the Division of Adult Education and Literacy's Clearinghouse on Adult Education and Literacy, The Curriculum Coordination Center Network, and the ERIC Clearinghouse on Adult, Career and Vocational Education:

* Project Final Performance Report
* External Evaluation of Project Winamac
* Curriculum Module on Linear Measurement

Presentations about the project were given at the following meetings:

* Survival in the 90's, Region VI Association for Continuing Higher Education and Indiana Association for Adult and Continuing Education, May 7-8, 1992
* Workplace Literacy Exchange, Indiana Department of Workforce Development, Oct. 11, 1991
* Indiana Adult Education Administrators' Conference, Indiana Department of Education, December 11, 1990
* Cass County, Indiana, Partners in Education, Sept. 12, 1990
* Kiwanis, Winamac, Indiana
* Kiwanis, Logansport, Indiana
* Rotary, Logansport, Indiana

Information about the project was also published in local newspapers, the company's newsletter, the Business Council for Effective Literacy Newsletter (July 1991), and the Indiana Association for Adult and Continuing Education Newsletter (Spring, 1991).

5. Report on any evaluation activities.

The project contracted with an outside evaluator, Mary Grcich Williams, in July 1990. The evaluator performed both formative and summative evaluations. The purpose of the formative evaluation activities was to improve the training components of the project during implementation and to remedy any problems that might occur. The evaluator specifically addressed assessment issues, monitored the curriculum development and assisted with materials selection. Project staff periodically surveyed participants and the advisory board for reactions to training and suggestions for improvement. Instructional staff recorded observations and anecdotes as needed.

The summative evaluation addressed the issues of meeting project objectives; appropriateness of instructional goals, objectives, and methods; and project impact and outcomes. The evaluator conducted interviews with project and company personnel, developed and analyzed a questionnaire for participants, and reviewed instructional modules. Project staff tracked learner participation and progress; Winamac Spring personnel collected data on various productivity measures through regular internal procedures. Quarterly reports were prepared throughout the project.

UNIT: MEASUREMENT

MODULE "A"

INTRODUCTION TO MEASUREMENT AND LINEAR MEASUREMENT

ITEMS TO HAVE ON HAND BEFORE YOU BEGIN

1. Pencil with eraser
2. Paper (for notes or scrap)

Here is a list of the items that the resource person should have given to you. If you are missing any of them, check with the resource person again.

1. Answer sheet #2 (front pocket of module folder)
2. Videotape - "Measuring Instruments"
3. Workbook - "Measuring Instruments - Mechanical Maintenance Workbook" (ITC)
4. Steel Rule or Tape Measure (in basket, #5)
5. Items to Measure - basket labeled : Meeasurement Unit A
6. VCR/TV

MODULE FORMAT / CONTENTS

ITEM	PAGE 3
Items to Have on Hand	1
Module Format /Contents	11
Lesson	1-19
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Words, Terms and Definitions	4
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.....(T.I.Y. #2)	14
.....(T.I.Y. #3)	15
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What Did You Learn? (Form A or B)	(see facilitator)
Answer Key #3 (Form A or B)	(see facilitator)

LESSON

INTRODUCTION TO MEASUREMENT
THE STEEL RULE

1. Read the objectives for this unit to find out what you will be expected to know by the end of this lesson.

   You will be asked to demonstrate your ability at the end of this module.

OBJECTIVES

On completing this module the worker will be able to perform the following tasks to the required standards.

1. Read the graduations on a steel rule or tape measure through the 1/32 scale.

2. Name the equivalent values for each graduation on a steel rule or tape measure through the 1/32 scale.

   Example: 1/2 = 2/4 = 4/8 = 8/16 = 16/32

3. Reduce the fraction in a measurement to its lowest terms.

4. Use a steel rule or tape measure to accurately measure the following to the necessary precision.

   a. The specified length or half-length of any given object.

   b. The specified width of any given object.

   c. The depth on any given object.

   d. The outside diameter of any given object.

   e. The inside diameter of any given object.

5. Define the terms used in this module that relate to measurement.

6. Demonstrate the correct techniques for using a tape measure or steel rule.

LESSON - continued

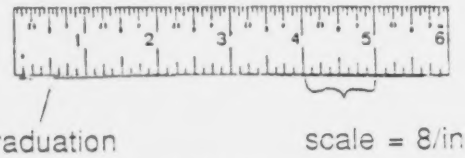
2. Read the vocabulary words for this module that are written on the next page. (Only spend time on the words and definitions that you don't know.)

TERMS AND DEFINITIONS

1. Graduations - the series of equally spaced lines on a rule. This determines the scale. (Fig. 1)

2. Scale - the number of graduations per inch on each edge of the rule. (Fig. 1)

(Fig. 1)



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3. Standard - a known value used in to measure an unknown. (Example: an inch is a standard)

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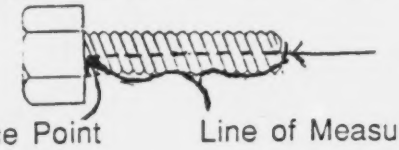
4. Reference point - the point where measurement begins (Fig. 2).

5. Measured point - the point where measurement ends (Fig. 2).

6. Line of Measurement - the imaginary straight line between the reference point and the measured point (Fig. 2).

(Fig. 2)



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7. Accuracy - Being as close to the standard of measurement as possible. (Example - being as close as possible to the "Bulls-eye" on a target.)

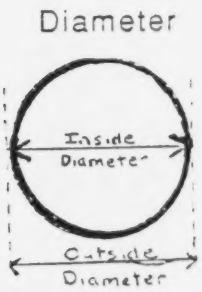
8. Precision - getting the same measurement for an object every time it is measured Being exact. (Example - When shooting at a target, getting each shot in the same location.)

TERMS AND DEFINITIONS (continued)

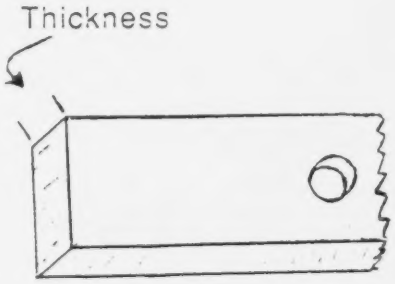
9. Diameter - a straight line passing through the center of a circle from one edge to the other (Fig. 3).

10. Thickness - depth. Example: the distance from one surface of a spring to the other surface (Fig. 4).

(Fig. 3)



(Fig. 4)



LESSON - continued

3. Open the workbook "Measuring Instruments", to page 1. Read the first paragraph titled, WHAT YOU WILL SEE. Briefly look at the pictures and drawings on pages 1 - 3.

4. View Segment A of the video tape "Measuring Instruments".

   Segment A is on THE STEEL RULE and runs form #22 -326 on the VCR. (This should take about 9 minutes.)

5. After viewing the video, please rewind it and return the tape to its case.

   Open the workbook to page 1.

   Beginning with **KEY POINTS**, read the information through page 3.

   #1. "Measuring Length, Width and Depth"
   #2. "Measuring Outside Diameter"
   #3 "Measuring Inside Diameter"

LESSON - (continued)

A. ON A STEEL RULE, LOOK FOR THE NUMBER THAT WILL TELL YOU WHAT THE SCALE IS.

The number is written above the first or second graduation on the left hand side of each scale **(Fig. 6).**

Example: the 1/8" scale is on the bottom of the rule in **Figure 6** and is marked by an **8.**

The 1/16" scale is on the top of the rule pictured. It is marked by a **16** just above the number that stands for six inches. **(See B).**

Figure 6

B. WHEN READING A STEEL RULE, ALWAYS BEGIN FROM THE LEFT EDGE OF THE SCALE THAT YOU ARE USING.

Example: If you wanted to use the 1/16th scale on the rule in Fig. 6, you would turn the rule over so that the "16" was on the left edge. (The scale would now be on the bottom of the rule.)

Since the 1/16 scale is on the bottom, the 6" mark become the "0 point", the 5" mark becomes the 1", etc.

C. ALWAYS LOOK AT A RULE OR TAPE STRAIGHT ON WHEN READING A MEASUREMENT (SIGHT SQUARELY).

This is an important technique. If you read a measurement from an angle, the reading could be off a fraction of an inch. This could throw off the tolerances.

7. Get answer sheet #2 (PRACTICE) from the front pocket of the module folder.

   Return to page 5 of the workbook.

   You can practice the techniques you have learned so far by getting the measurements required under "**DISCUSSION QUESTIONS**" on pages 5 and 6.

NOTE: If you need to take a break, or are out of time, this is a good stopping point.

If stopping for the day, please return your materials to the resource person.

When you are ready to start again, begin at #8 in the module.

LESSON - (continued)

B. The rules for using a tape measure and a steel rule are similar. However, there are a few techniques to learn when using a tape measure that will make it easier to get accurate measurements.

Read the following material, stopping to do each **PRACTICE** or **TRY IT YOURSELF** as you come to it.

There are spaces on Answer Sheet #2 to write your answers.

LESSON - (Continued)

TAPE MEASURE TECHNIQUES

SOME INFORMATION THAT SHOULD BE USEFUL IN TAKING MEASUREMENTS, ESPECIALLY WHEN USING A TAPE MEASURE, IS WRITTEN BELOW.

Get the tape measure from the Module I.A. basket and pull it out to the one foot mark.

A. **MANY TAPE MEASURES HAVE A 32ND SCALE ON THE BOTTOM EDGE THAT ENDS AT THE ONE FOOT MARK.**

Starting at the one foot mark, most tapes use only a 1/16th scale on both the top and bottom edge.

B. **NOTICE THAT THE HOOK ON THE END MOVES IN AND OUT A FRACTION OF AN INCH.**

The tape is made that way to accommodate the thickness of the hook and the difference it would make when taking an inside versus an outside measurement.

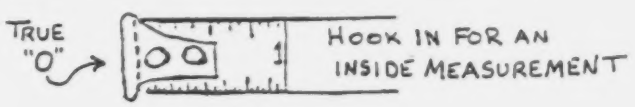
If the hook didn't move, and outside measurement might be correct. However, if you had to take an inside measurement, it would be off at least a 32nd of an inch (the thickness of the hook).

In many general uses, a measurement one or two 32nds off is not too serious. However, if the fit of what you're measuring is important, this could mean the difference between getting it right the first time or having to do it over.

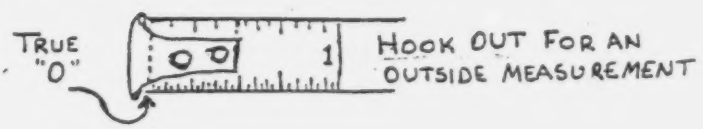
LESSON - (continued)

The point where the measurement actually begins is called the"TRUE 0" point.

If the hook is pushed in, the outside of the hook is the "TRUE 0". This is the case when taking an **inside** measurement.



If the hook is pulled out, the inside of the hook is the "TRUE 0" point. This happens when taking an **outside** measurement.



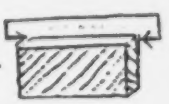
TRY IT YOURSELF #1

Using the video tape box marked Q-7 and your tape measure, measure the inside length of the box.

Notice how the hook moves in.

Write your answers on Answer Sheet #2 under TIY #1.

The inside length of box Q-7 is _____.

Now, measure the outside length of box Q-7. 

The hook will move out so that the inside of the hook can become the "TRUE 0".

The outside length of box Q-7 is _____.

LESSON - (continued)

C. **SOMETIMES, IT IS EASIER TO START A MEASUREMENT AT THE 1, 2, OR 3" MARK INSTEAD OF THE HOOK.**

This is especially true when measuring a flat surface or when beginning at a curved surface on an item.

Wherever you begin the measurement on the tape, that number becomes the "True 0" point.

TRY IT YOURSELF #2

Try measuring the line below beginning with the hook end on the tape measure. Notice how the tape has to be angled, and how hard it is to find the end point. Also notice how difficult it is to keep the hook from moving in and out.

Now, try to measure the same line beginning with the 2" or 3" mark on the tape. Did you find it easier to find an end point?

Just remember to subtract those extra inches from your final reading to get the true measurement.

Line #1. |_____|

Line #1 is _____ inches long. (Write your answer under TIY #2)

LESSON - (continued)

TRY IT YOURSELF #3

Take a **bushing** from basket I.A.
Find the **inside diameter.**

Again, it is easier to begin at the 1" or 2" mark. Because of the curved surface, the hook will not lay flat. If begun at the hook end, the measurement may not be accurate.

The inside diameter of the bushing is _____.

Find the **outside diameter** of the bushing.

Since the hook end will not lay flat against the outside of the bushing, it is best to begin at the 1" or 2" mark.

Ideally, as demonstrated on the video tape, a straight edge should be held against the bushing to give a true reference point.

The **outside diameter** of the bushing is_____.

(Most of the time, this kind of measurement would be done with a caliper...but that's another lesson.)

HOW IS IT GOING?

YOU ARE ALMOST THROUGH WITH THE LESSON.

JUST ONE MORE SECTION,
THEN YOU CAN REVIEW HOW YOU'VE DONE SO FAR!

9. In every workplace, there may be special ways to take a measurement or special items to measure.

   The next section shows several of the special conditions that you may deal with at Winamac Spring.

Read the following pages, stopping to do each **TRY IT YOURSELF** as you come to it.

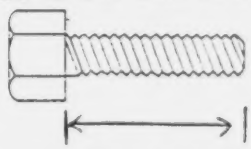
There are spaces on Answer Sheet #2 to write your answers.

LESSON -(continued)

INDUSTRY SPECIFIC PRACTICES AND MEASUREMENTS

MEASURING A BOLT

A. The correct way to measure the length of a bolt is from under the head to the end of the threaded area. (Fig. 7)



B. **SPECIAL CIRCUMSTANCES:** If a bolt is to fit down inside an object (recessed in a spring), it may be necessary to get a measurement that includes the head.

TRY IT YOURSELF #4

Get a bolt from basket I.A.

Find the length using the correct techniques. Then find the total length as if the bolt is to be recessed in a spring.

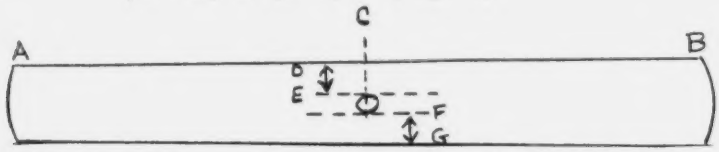
The correct bolt length is _____.

The total bolt length is _____.

LESSON -(continued)

MEASUREMENTS ON A SPRING*

A. **Half Length** - a measurement that is taken from either end of the spring to the center of the hole. (A - C) or (B-C) (Fig. 8)



B. **Width, side to side** - a measurement that is taken from the edge of the center hole to the edge of the spring on the same side. (D - E) and (F -G) (Fig. 8)

*Most of the time, you will not have to use a tape measure when taking these kinds of measurements.

TRY IT YOURSELF #5

Get the spring form basket marked I.A.

Find the **half length** of the spring from the "A" end.

The **half length** of spring A is _____.

Now, find the **width, side to side,** of spring A from both sides. Getting both widths will help you to see if the hole is centered.

The width, side to side from **D - E** is _____.

The width, side to side from **F - G** is _____.

ANSWER KEY #2

WORKBOOK

and

TRY IT YOURSELF

QUESTIONS

ANSWER SHEET #2

WORKBOOK QUESTIONS

1._____ 2a._____

2b._____ 2d._____

2c._____ 2e._____

TRY IT YOURSELF #1

Inside Length of Box Q-7 _____

Outside Length of Box Q-7 _____

TRY IT YOURSELF #2

Length of Line #1 _____

TRY IT YOURSELF #3

Inside Diameter of the Bushing _____

Outside Diameter of the Bushing _____

TRY IT YOURSELF #4

Correct Bolt Length _____ Total Bolt Length _____

TRY IT YOURSELF #5

Half Length of Spring _____

Width, Side to Side of Spring **(D-E)** _____

Width, Side to Side of Spring **(F -G)** _____

WHERE TO GO FROM HERE #2

If your answers didn't match the key, you can do one or all of the following things:

1. Go back to the workbook, film, or module and redo the section on the measurement technique(s) that you missed.

2. Talk to the resource person or instructor to work through the measuring process(es) that you need to practice.

3. If you are in a classroom situation, work together in a group to practice the measurement techniques.

When you have completed the above exercises to your satisfaction, you may return the module booklet and other materials to the resource person.

The resource person will then give you a sheet titled:

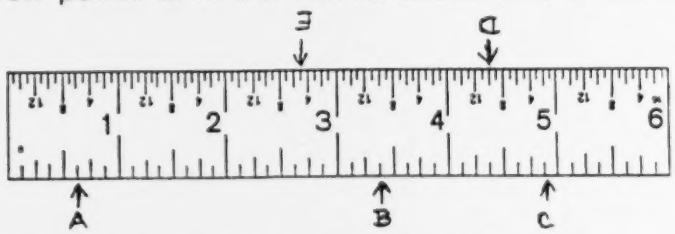
"WHAT DID YOU LEARN"

WHAT DID YOU LEARN?

Put your answer in the blank next to the correct number on Answer Sheet #3. Please do NOT write on this form.

Unless otherwise stated, reduce all fractions to their lowest terms.

1. Look at the steel rule shown below. Write the measurement that each arrow points to in the correct blank on the answer sheet.



2. Reduce the following fractions to their lowest terms.

   a. 6/8 b. 2/4 c. 12/16 d. 18/32

3. Measure the **length** of this bolt to the nearest 32nd of an inch.

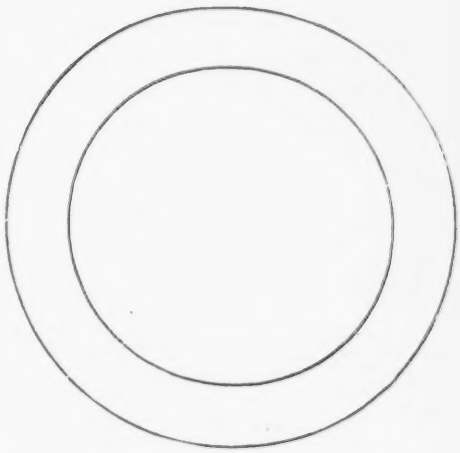
4. Measure the **side to side** width of this spring from point C.

5. Measure the depth of the bushing to the nearest 16th of an inch.

(continued)

6. Measure the **inside diameter** of the drawing below to the nearest 8th of an inch.

7. Measure the **outside diameter** of the drawing to the nearest 8th of an inch.



WHAT DID YOU LEARN?
ANSWER SHEET

1. Measurement **"A"**_____.

   Measurement **"B"**_____.

2. a._____ b._____ c._____ d._____

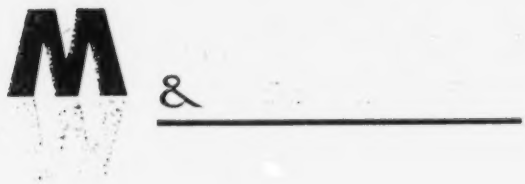
3. The **Length** of the bolt is_____.

4. The **Side to Side** width of the spring from point C is _____.

5. The **depth** of the bushing to the nearest 16th of an inch is_____.

6. The **inside diameter** of the drawing is _____.

7. The **outside diameter** of the drawing is _____.



EXTERNAL EVALUATION OF

PROJECT WINAMAC

Submitted to

El-Tip-Wa Adult Education Center

Conducted by

Mary Grcich Williams

August 1991

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External Evaluation of Project Winamac

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EXTERNAL EVALUATION OF PROJECT WINAMAC

August, 1991

EXECUTIVE SUMMARY

El-Tip-Wa Adult Learning Center contracted with Mary Williams & Associates to conduct an external evaluation of Project Winamac, a workplace literacy partnership with Winamac Spring, a manufacturer of leaf springs for the truck trailer industry located in rural north central Indiana. The evaluation was designed to meet the requirements of the U.S. Department of Education, from which a federal grant was received to operate the project under the National Workplace Literacy Program.

The purpose of the project was to upgrade the basic skills of the hourly workforce at Winamac Spring using the literacy requirements of actual jobs as the focus of the training. The project began on June 1, 1990 and ended August 30, 1991.

The evaluation consisted of participant questionnaires; interviews with Winamac Spring managers, supervisors and technical personnel; interviews with instructional personnel and community representatives; pre-post test data; review of project materials; and analysis of productivity and cost information.

Program Summary

1. Classes for Winamac Spring's approximately 300 hourly workers were begun in October, 1990. Attendance was mandated and workers were given paid released time to participate. Classes were held at the start of each of the three work shifts. Each participant received 50 minutes of instruction during each two-week training cycle.

2. The roster of hourly workers was reduced by layoffs to 205 by May, 1991. Questionnaires were completed by 195 participants during a training cycle in late July.

3. Instruction focused on the basic vocabulary, reading, math, and problem-solving skills needed to understand the technical aspects of various jobs in the plant. Topics included safety, measurement, statistical process control, blueprint reading, and using the quality manual. Group instruction was supplemented with individualized instruction using IBM compatible computers.

4. Workers were also offered a variety of special classes, identified as a result of a needs survey, that they could attend on a voluntary basis.

Summary of Conclusions

1. Because standardized testing was suspended when participants reacted negatively, there is insufficient evidence to judge the impact of the project on the general literacy skills of workers. However, pre-post unit testing showed substantial gains in short-term mastery of course material.

3. Participants at the most basic functioning levels were not as well served in the group instructional settings as they might have been with individualized instruction.

3. Employee self-reports and supervisor assessments indicate that there were improvements in job performance as a result of the project. Improvements, however, were limited in scope.

4. There were positive trends in all of the productivity and cost measures examined. It is likely that the training program contributed to those trends, but other changes in workplace conditions could have contributed as well.

5. The project appeared to have negligible impact on employee attitudes, in the view of supervisors and technical personnel. However, this finding could be indicative of problematic supervisor-employee relations.

6. Positive worker attitudes did appear to develop toward the training program itself.

7. The commitment of Winamac Spring to the project in terms of wages paid, facilities provided, and other types of support given, was substantial. A decision was made at the project's conclusion to continue the program using company funds.

Recommendations

1. Winamac Spring personnel should consider how training needs can be addressed on a more individualized basis.

2. Meaningful ways should be found to involve supervisors in the planning process.

3. If possible, the element of independence inherent in educational services being provided by an educational agency should be retained.

4. Continuing efforts should be made to convince Winamac Spring hourly employees that impending workforce changes are real and that they stand to reap benefits from the increased capacity on the job.

External Evaluation of Project Winamac
A Workplace Literacy Partnership

August, 1991

BACKGROUND

Program Description

Project Winamac is a workplace literacy partnership between Winamac Spring (formerly Winamac Division), a manufacturer of leaf springs for the truck trailer industry located in the rural north central Indiana town of Winamac, and El-Tip-Wa Adult Learning Center, provider of the local adult basic education (ABE) program.

The Winamac Spring management recognized a need to upgrade its technology and manufacturing processes in order to remain competitive. Similarly, it recognized that the skills and productivity of the hourly wage earners needed upgrading in order to handle the changes that were already underway.

After discussing program and funding options with the director of the ABE program, a decision was made to apply for a federal workplace literacy partnership grant. Although the first proposal submitted for these highly competitive grants failed, the second was successful.

The federal requirement that the funded programs demonstrate a strong relationship between the skills taught and the literacy requirements of actual jobs fit nicely with the philosophy of El-Tip-Wa ABE. The program had traditionally emphasized meeting the everyday life skill needs of adult learners. It was also one of twelve pilot projects implementing IN-PACE, the Indiana Program of Adult Competency Education, a statewide initiative to adopt competency-based education.

Need for the Program

The work at Winamac Spring is dirty, hot and hazardous. Turnover has been a consistent problem among the hourly workers. At the beginning of the project, there were 285 hourly workers; new employees were being trained every three weeks. Between October, 1988 and September, 1989, 203 hourly employees were hired.

Safety has been another concern at Winamac Spring. During 1989, $305,000 was spent on Workmen's Compensation, and four employees had received more Workmen's Compensation than working wages.

Development of human resources is a necessity for Winamac Spring. The company is located in a rural area with a small labor pool. The population of Pulaski County was 13,300 in 1985. Although

almost 40% of the county's adult residents did not have high school diplomas according to the 1980 Census, the unemployment rate was a relatively low 5.4% in 1988.

Training opportunities for adults are not available in Winamac, which is 40 miles from the nearest university and 25 miles from a technical college. The El-Tip-Wa Adult Learning Center, located 25 miles away in Logansport, is part of an area vocational district that serves the county.

Over several years, Winamac Spring saw markets for its products drying up, being replaced by suppliers from Japan, Korea, Canada and Mexico. In part, the attraction was the cheaper labor available in those countries. But, according to top management, Winamac Spring found it increasingly difficult to meet newer standards of productivity and quality.

An investigative team from General Motors, Winamac Spring's largest customer, came to the plant to interview workers and department heads. They checked paperwork and procedures for accuracy and for consistency with policies. The department heads took the next steps, analyzing workers' tasks and identifying training needs. A training plan was submitted to GM and approved. According to the plan, the hourly operators must, after training, be able to*:

- use the Quality Manual as a reference tool;
- solve basic math problems using whole numbers, fractions and decimals;
- measure using several measuring tools -- micrometers, calipers, and tape measures;
- use a calculator for figuring averages and variances;
- demonstrate the use of statistical process control in $\bar{X}$ & R Charting;
- compare and contrast metals and heat treating; and
- demonstrate various safety procedures.

(*partial list)

The federal workplace literacy partnership grant provided the resources and opportunity to develop and evaluate training strategies that specifically addressed the identified needs.

Purpose of the External Evaluation

The services of an external evaluator were secured to provide both formative and summative evaluation. The formative evaluation was to consist of feedback during project implementation, while the summative evaluation was to document project results.

The formative evaluation was to deal with such questions as:

- How might the quality of the training be improved?
- How might the hourly employees' motivation and educational progress be improved?
- What instructional procedures might be taken to improve training?
- Are the employees' needs being addressed? How might the needs be better assessed?

The summative evaluation was to deal with such questions as:

- Were the project objectives met in a timely manner?
- Were the training goals and objectives appropriate for the employees and the company?
- Were the instructional methods appropriate to the training content?
- What was the impact of the project? Were there changes in absenteeism, turnover rates, safety records, product rework, pre/post test scores, and level of job skills? What were the unexpected outcomes?
- What project accomplishments can be documented?

Design of the Evaluation

The formative evaluation consisted primarily of periodic informal consultations, where questions were raised and feedback given on such topics as assessment, curriculum development, and materials. Assistance was also provided in establishing a project advisory council.

Because the budget for the evaluation was modest, most of the data collection for both formative and summative purposes was done by project staff or by Winamac Spring personnel. Project staff was responsible for tracking learner participation and progress. Winamac Spring personnel collected data on various productivity measures through regular internal procedures.

The outside evaluator developed interview guides and conducted interviews with the following: project staff (ABE director, project coordinator/instructor and instructional assistant); top management at Winamac Spring; selected technical personnel, plant supervisors and superintendents from all three shifts; and community representatives.

The outside evaluator also developed a questionnaire for participants that was administered during one training cycle near the end of the grant period. Because it took two weeks for the participants from all shifts to complete the training cycle, the questionnaire was administered by the instructors using a script prepared by the evaluator. Participants sealed the completed questionnaires in envelopes to assure the confidentiality of responses.

Finally, the outside evaluator reviewed several of the instructional modules developed as part of the project.

PROJECT DESIGN AND DELIVERY

Anticipated Outcomes

The funding proposal established objectives for the project along with a variety of activities. The proposal was planned primarily by the El-Tip-Wa ABE director and the Winamac Spring safety and training director. As the plan was implemented and involvement was broadened to include others in upper management, the union, community representatives, and the participants themselves, other expectations developed or were clarified. Anticipated outcomes are listed below; those with an (*) were not part of the original proposal.

1. Hourly workers after training will be able to:

   a. implement safety measures,
   b. comprehend and interpret the Quality Manual,
   c. apply statistical process control,
   d. complete required forms,
   e. *read and interpret blueprints, and
   f. *understand basic spring making, heat treat, and forge processes.

   The above will be demonstrated by:

   a. supervisor ratings of performance, and
   b. 85% mastery level on criterion referenced post-tests administered at course completion.

2. Hourly workers will demonstrate progress when CASAS (Comprehensive Adult Student Assessment System) post-test scores are compared with pre-test scores.

3. Productivity will increase and costs decrease as evidenced by decreased absenteeism, accident and turnover rates after training.

The following expectations were clarified in the initial meeting of the advisory committee but were not written as part of the original proposal:

4. *Worker attitudes about their jobs and the company will improve.

5. *Worker self-esteem and interest in their own abilities as "lifelong learners" will increase, evidenced in part by participation on a voluntary basis in other available training opportunities.

The plan for Project Winamac also included the following additional "process" objectives:

1. A competency-based approach to instruction will be used.

2. Job task analysis will be done to identify the basic literacy skills and their applications in the workplace.

3. Individualized educational plans for workers will be developed through criterion referenced assessment.

4. A mastery approach to teaching will be used.

5. Varied instructional materials will be used, including video, computer-assisted instruction, and customized materials developed by project staff as needed.

7. Lesson plans and materials used will be assembled into skill modules that can be used after the grant period for review or with new employees.

Implementation of Plan

Between time of the submission of the grant proposal and scheduled project start-up, Winamac Spring came under new ownership. The new owners supported the company's continued involvement with the project, and the coordinator/instructor was hired shortly after the June 1, 1990, start date. However, some decisions affecting project start-up were delayed during this period of transition, largely because the contract between Winamac Spring and the local union was being renegotiated during that same time frame. Fortunately, a settlement was reached, and the initial class session was held in early October, approximately one month later than anticipated.

Other events also conspired to get the project off to a rocky start. A local newspaper article announcing the receipt of the grant for this "workplace literacy" program, gave the impression to workers that the company perceived them as "illiterate." According to the company president, this incident aggravated a situation in which employee relations had been extremely poor for some time. He indicated that the previous owners had spent little money on the plant, either for facilities or human resources; for example, the wages at Winamac Spring were 18% less than the prevailing wages of the area.

Planning for the Project

An advisory board, while not provided for in the original project plan, was organized and met for the first time in early September. Membership included the president, the safety and training director, and one department head from Winamac Spring; the chief steward (union representative); the ABE supervisor from El-Tip-Wa; the project coordinator/instructor and instructional assistant; and two community representatives--a physician (who also served as plant physician) and the local superintendent of schools.

The advisory committee acted as a sounding board concerning project goals and strategies, course content and schedules, evaluation, and problem solving. One specific result of advisory board input was the offering of special interest classes that workers could attend on a voluntary basis.

Role of the Partners

The primary partners in the project were the Winamac Spring management and El-Tip-Wa Adult Learning Center. The local union was also brought into the project very early in the process. A fourth partner, the Kankakee Valley Workforce Development Center (JTPA agency), played a small role.

El-Tip-Wa acted as grant recipient and manager, acquired or provided all instructional equipment and materials including some items not covered by the federal grant budget; and recruited, hired, and trained the project staff.

Winamac Spring paid employee wages for the time workers spent in mandated training sessions. (Released time was granted near the beginning of each shift.) The company also built and equipped a training room just off the plant floor especially for the project. Other contributions included technical expertise for curriculum development, and on-site services such as duplication of materials.

The union's participation was primarily through the representation of the chief steward, who served on the advisory board and acted as liaison with the project coordinator.

The Kankakee Valley Workforce Development Center was used on a subcontractual basis to provide career counseling. The counselor advised and assisted any Winamac Spring employees interested in further technical and postsecondary training opportunities, including how to apply for financial aid.

Staffing

The El-Tip-Wa Adult Learning Center hired two full-time staff members for Project Winamac.

The project coordinator served as overall manager for the project, was the lead instructor, did the curriculum development and instructional design, and previewed and selected materials. He had an Indiana teachers license, a Master's degree in elementary education and sixteen years teaching experience, and experience in industry both as a line worker and as an owner of a manufacturing enterprise.

A teaching assistant was also hired from the local community. She held vocational education teacher license and had served as a trained volunteer literacy tutor. Her roles included working with supervisors to schedule participants; assisting with materials selection; working with the computer software, including some programming; writing up instructional modules; serving as secretary for the advisory board; and keeping project records.

Both staff members took advantage of available staff development opportunities. The coordinator attended the national workplace literacy partnership grantee training. The project coordinator and ABE supervisor spent a day visiting a competency-based workplace literacy program in another Indiana community. The coordinator and assistant attended local training opportunities offered through the El-Tip-Wa ABE program, state adult education workshops and conferences, and a weekend residential literacy training program at Indiana University in Bloomington.

Participant Selection and Assessment

Winamac Spring management determined that those classes that were provided on company time and premises, and for which employees received paid released time, would be mandatory. They felt that this strategy would reduce any embarrassment or stigma an employee might feel at being selected for basic skills classes, while side-stepping issues related to employee testing.

Since Winamac Spring had nearly 300 hourly employees working three shifts, this decision had a number of consequences for the program, among which were:

1. The participants were much more diverse in their skill levels than if selected and grouped by, say, test scores.

2. The numbers of participants to be trained in each segment were quite large; after a attempts to serve all participants weekly proved too burdensome for the instructors, a two-

week cycle for each class was implemented. Each employee received only 50 minutes of instruction every three weeks.

3. All employees received training in all of the topic and skill areas offered. Depending on the employee's department and actual job, a particular session was not necessarily related to the skills currently being used on that job.

All participants in the program were to have been given a CASAS achievement test before and after training to assess overall progress. The CASAS appraisal test, which identifies which level of the pre-post assessment is appropriate, was given at the fourth class meeting to approximately 230 workers.

The reaction to the testing was so negative, with several participants refusing to be tested and many others complaining loudly, that a decision was made to suspend standardized testing indefinitely. However, the appraisal test gave the instructors a very general idea about the participants' beginning functional levels. The group included several nonreaders, while some individuals could handle advanced work.

As a means of documenting progress, the staff had to rely solely on the strategy of using teacher-made pre- and post-tests that covered the material taught.

Curriculum and Instruction

The project coordinator relied on consultations with various technical experts within the company in order to develop a curriculum that integrated the basic skill instruction with the specific vocabulary, materials and processes used in the plant. Among those involved were the director of quality assurance, the metallurgist, and engineering personnel. In some instances, the technical experts also sat in on the classes and provided feedback.

The reliance on staff technical expertise was necessary, according to the project coordinator, because the plan to perform job task analyses was not carried out. That process could not be initiated until the various start-up issues had been resolved. By that time, the project was already behind schedule. The initial needs assessment done by the General Motors team had used task analysis to determine the overall skills needed by the workforce. Those findings helped guide the selection of topics and skills taught within the program.

The curriculum was divided into short segments or modules; each topic was covered in one or two class sessions.

The initial class was devoted to orientation and intake, in which participants were familiarized with the project and its purposes.

The next two sessions were spent on general and visual safety. The instructors theorized that safety would be a common and familiar topic, and therefore provide workers an easy entry into the program.

A course evaluation administered following the two safety classes, however, revealed that safety was not the most popular of topics. The union apparently took the position that plant safety had more to do with the elimination of hazardous conditions than it did the teaching of precautions to individuals. The instructors decided to move quickly to other subjects, although additional safety issues were dealt with later in the program. The other classes offered were:

- linear measurement
- statistical process control (SPC)
- use of calipers
- hazardous communication
- blueprint reading
- safety (lockout/lifting/hearing)
- quality manual
- heat treat

In each class, instruction was geared to the basic vocabulary, reading, math, and problem solving skills needed to understand the technical aspects of the various jobs in the plant -- the so-called "functional context" approach to workplace literacy. For example, the SPC units dealt with identifying, understanding and calculating the mean, median and mode. The Quality Manual sessions stressed locating information, reading for comprehension, and interpretation.

Instruction followed an accepted strategy of competency-based instruction: theory (description and uses of the skill), modelling or demonstration, practice, and demonstrated mastery on simulated tasks.

Gradually, a format emerged for the curriculum modules, which were packaged for continued use beyond the grant period. With some variation, the modules contain the course objectives, pre-test, list of materials needed, the lesson(s), and self checks including a post-test. Materials ranged from texts to videos to actual parts and tools.

In addition to the subject-oriented classes, which were group learning experiences, both scheduled and supplemental (voluntary) time was spent in individualized instruction using IBM compatible computers and a software program called BASE, an interactive program providing instruction and practice on basic skills in several occupational contexts.

Although there were some non-readers in the classes, the staff found them resistant to attempts to place them with tutors or get them to use self-instructional literacy material that had been acquired. The staff expressed a sense of frustration and helplessness at the limits of time, structure and ingenuity which limited their ability to deal effectively with this group that had the greatest need for literacy instruction.

As mentioned earlier, participants were surveyed to determine their level of interest in voluntary, non-work related courses that would be sponsored by Winamac Spring. The highest interest was found in the following areas:

Topic	Number Interested
Investing	64
CPR	55
Auto Care/Maintenance	55
Retirement	40
Home Care/Maintenance	40

In addition, 27 individuals expressed an interest in attending a GED preparation class.

A two part CPR/First Aid class was organized; 17 employees were certified in both areas and two in CPR only. A three-session financial planning course was attended by approximately 20 employees. Eight individuals attended a GED information session, while three enrolled at various community sites. An on-site GED class was dropped due to limited participation.

FINDINGS: PROJECT RESULTS AND IMPACT

Extent of Accomplishment of Project Objectives

This section of the report addresses several of the questions posed by the evaluation, as described earlier (see page 3). It addresses the extent to which the objectives of the project were met in a timely manner, the appropriateness of the training goals and objectives, and the appropriateness of the instructional methods.

The instructional component of Project Winamac started approximately one month late because of the change in ownership of the company and the renegotiation of the agreement with the local union. The greatest consequence of the delay was a decision to forego conducting job task analyses to identify the specific literacy requirements of jobs at Winamac Spring.

Fortunately, data was available from a recent assessment by General Motors and Winamac Spring department heads in which job task analysis was used as part of a process to develop an overall training plan for workers (see page 2). Department heads, technical staff and to some extent supervisors were consulted by the project coordinator concerning specific information and skills required in the various job areas. For this reason, the overall objective of creating a curriculum that incorporated the applications of basic skills from the workplace was achieved.

Of the other process objectives described on page 6, only one was not achieved -- the plan to develop individualized educational plans based on criterion referenced assessment. Not only were group instructional strategies more appropriate in view of the company's decision to mandate that all hourly workers attend training sessions, but neither literacy task analysis data nor individual assessment data were available upon which to base individualized plans.

Individualized study was used in one component of the program, i.e., the sessions in which participants worked at the computer stations. The instructional assistant was able to place each worker in the program according to occupational interest area and skills that needed strengthening.

As planned, the instruction was competency-based. Specific skills were taught in an applied (job-related) context. The instructional modules had not all been completed at the time of the evaluation interviews, but good progress had been made. A review of several modules showed that course objectives, teaching strategies, practice exercises, and pre-post tests within the modules were consistent with the principles of mastery learning. They also

documented the wide variety of commercial and adapted teaching materials that were used.

In the evaluation interviews, members of the instructional team described their ongoing efforts to use feedback from the participants to focus and modify instruction. A participant survey was used early in the program as a feedback tool. Once course pre-tests began to be used, these served as another form of needs assessment. The instructors also said that they encouraged the participants to be open and frank with their suggestions.

In the evaluation questionnaire, the participants were asked, "How do you rate this program?" with response choices "very interesting to me," "somewhat interesting," and "pretty boring;" and "How hard was the program for you?" with response choices "too hard for me," "just about right for me," and "too easy for me." The results, presented in Table I and Table II, give a rough indication of how well the instructors were able to gear the program to the interests and skill level of the workers.

How Do You Rate This Program?

	N	% VERY INTEREST.	% SOMEWHAT INTEREST.	% VERY + SOMEWHAT INTEREST.	% PRETTY BORING
ALL PARTICIPANTS	193	33	59	91	9
MIDNIGHT	62	39	53	92	8
AFTERNOON	48	19	69	88	13
DAY	83	36	57	93	7
ASSEMBLY	67	33	60	93	7
FORGE	68	26	68	94	6
HEAT TREAT	36	36	50	86	14
OTHER	22	45	41	86	14

The figures in the response columns represent the <u>percentage</u> of participants who gave each response.

TABLE I

The majority of participants found the program somewhat interesting (59%), while 9% found it boring. A total of 91% said the program was either very interesting or somewhat interesting. Results are also presented by shift and by department. The greatest deviations from the mean are in the categories of "other" (which includes maintenance, set-up, warehouse, and employees working more than one department), where relatively more participants found the program very interesting, and relatively fewer found it somewhat interesting; and on the afternoon shift, where relatively fewer found the program very interesting.

Most participants found the program's level of difficulty (Table II) to be about right (68%). However, a significant minority (27%) found the program too easy. Only a few said the program was too hard for them (4%). Differences among shifts and departments were not dramatic.

How Hard Was the Program?

	N	% TOO HARD	% ABOUT RIGHT	% TOO EASY
ALL PARTICIPANTS	193	4	68	27
MIDNIGHT	62	1	65	34
AFTERNOON	48	4	73	23
DAY	83	6	67	25
ASSEMBLY	67	3	69	28
FORGE	68	4	72	24
HEAT TREAT	36	5	64	28
OTHER	22	5	59	36

TABLE II

One of the inevitable consequences of teaching in heterogeneous groupings is that instruction is geared to the "middle." The material will be over the heads of some, and insufficiently challenging to others. In a workplace situation where mastery of the "basics" is so critical, it may be better to err on the side of oversimplifying. In that respect, the small number who said the program was too hard is a positive finding.

The figures are positive in another respect. We might expect the percentage who said the program was too easy to correspond to the percentage who found the program boring. On the contrary, there is a wide discrepancy (9% boring/27% too easy).

Impact of Project on Literacy Improvement

Because the CASAS achievement tests were not administered, there is no standardized test data to indicate the general level of literacy improvement of the project participants. However, Table III shows that tests administered before and after certain of the instructional units demonstrate measurable improvement in the acquisition of the skills taught in those units, using the criterion level of 85% mastery established in the proposal:

% of Participants Above 85% Criterion on Test Scores

CLASS TITLE	N	>85% PRETEST	>85% POSTTEST
HEARING CONSERVATION & BACK INJURY PROTECTION	215	33.4	90.7
HAZARDOUS MATERIALS	212	14.6	51.9
HEAT TREAT	191	18.8	71.7
QUALITY MANUAL	185	2.7	73.5

The figures represent the percentage of participants who exceeded the 85% standard on the pre-tests and corresponding post-tests.

TABLE III

Substantial gain was made in each class. However, only half of the participants in the hazardous materials course met or exceeded the criterion level on the post-test for that unit.

Impact of Training on Job Performance

There are two sources of data on the impact of training on participant job performance: the reported impact by the participants themselves in a post-training questionnaire, and the reported impact by the employees' supervisors.

Participants were asked, "Has this program helped you do your job better?" Response choices were: "yes, quite a bit," "yes, a little," and "no, not very much." Participants were also asked,

"Are there some things you can do better now than you did before taking the class? If so, what are they?"

As the figures in Table IV show, 73% of the participants said that the program helped them do their job "quite a bit" or "a little" better. However, more participants said that the program did not help very much (26%) than said it helped quite a bit (18%).

More workers on the midnight shift thought the program had helped them do a better job (79%); the afternoon workers reported the lowest level of help (64%).

By department, more workers in forge thought the program had helped (81%); the fewest (59%) were in the category of "other."

Did Program Help You Do Your Job Better?

	N	% YES QUITE A BIT	% YES A LITTLE	TOTAL % YES	% NO NOT VERY MUCH
ALL PARTICIPANTS	193	18	55	73	26
MIDNIGHT	62	18	61	79	21
AFTERNOON	48	12	52	64	33
DAY	83	20	52	72	27
ASSEMBLY	67	6	57	73	27
FORGE	68	16	65	81	19
HEAT TREAT	36	19	44	63	36
OTHER	22	23	36	59	32

The figures in the response columns represent the percentage of participants who gave each response.

TABLE IV

It should be noted that the supervisors were not asked to complete individual performance evaluations, but rather were asked, "Would you say it [the program] ended up helping all of them, most of them, some of them, a few, or none?" and "Can you give me examples of improvements you have noticed in individual work performance?"

How did the superintendents/supervisors and technical/quality staff judge the extent of improved job performance of the individuals that they had the opportunity to observe? The most frequent response given in interviews was that "some" had improved (see Table V). Comments were often along the lines of, "Those that put something into it got something out of it, but a lot of them don't care."

Four of the supervisors said that "most" of their workers had improved. One said that he was "delightfully surprised." Two of the technical/quality staff said they did not have the type of contact with workers that would let them make judgements about performance.

Others' Perception of Improvement on Job

	N	ALL IMPROVED	MOST IMPROVED	SOME IMPROVED	A FEW IMPROVED	NONE IMPR.
SUPERINTENDENTS & SUPERVISORS	10		4	5		1
TECHNICAL & QUALITY	*5		1	3	1	
TOTAL	15		5	8	1	1

*The figures in this table represent the numbers of persons who gave each response. Each person rated the program's impact on employees that they observed. (*2 who responded "don't know" were excluded.)*

TABLE V

All fourteen supervisory and technical staff who noticed improvement were able to give specific examples. The examples fell into the following categories:

Measurement/tapes/calipers (5)
Math (3)
Blueprint reading (2)
SPC (1)
Reading gauges (1)
Understanding shop cards (1)
Understanding terminology (1)
Writing (1)

Two supervisors commented that some workers were able to perform measurements and take readings independently for the first time. Two quality inspectors mentioned that some workers were more conscientious about checking their own parts. One said, "Now they're using the calipers and mics; before, they'd say, 'I've got to have one of those,' and they'd bring them back clean; now they ask for them and bring them back trashed!"

In what areas did the workers perceive their own performance had improved? Only 76 respondents (39%) gave specific examples. (The low response rate could be, but is not necessarily, due to the fact that this question was one of the few on the participant questionnaire which required a written response, rather than a multiple choice selection.) The following responses were given, with the number of times each was given indicated [more than one response per respondent was possible]:

Caliper reading (33)
Understanding blueprints (16)
Charting/SPC/QC processes (11)
Measurement (9)
Safety (9)
Computers (5)
Math (4)
CPR/first aid (4)
Reading/spelling (2)
Other (6)

The responses of the supervisory and technical personnel were fairly consistent with those of the workers themselves. The skills and information taught in the classroom appear to have had some impact in the shop, but to a limited degree and not with all workers. Those skills with the most transference to the job were measuring, both linear and with calipers, and blueprint reading. In the academic skill areas, a few workers and supervisors reported progress in math. Only a tiny number thought that reading, writing or spelling had improved.

Workplace literacy research suggests that success with a "functional context" approach to literacy development requires that participants begin the program with sixth to seventh grade reading skills.[1] Special assistance, including use of some of the more traditional methods of reading instruction, is usually necessary for workers below that level.

Instructors in the program acknowledged that there were beginning readers among the participants, and were well aware that the

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[1]Philippi, Jorie W., "Developing Instruction for Workforce Literacy Programs," Performance Plus Learning Consultants, Springfield, Virginia, (no date), p.1.

inability to individualize instruction limited their effectiveness with that group.

On the other hand, the functional context approach may have an impact on general literacy skills that does not seem obvious to the worker: after all, they are studying "calipers" and "blueprints," not "reading." So that findings concerning the growth of literacy abilities can be compared from program to program, experts like Thomas Sticht recommend that pre- and post-testing with standardized basic skills tests be used along with job-related reading task tests constructed from actual job materials.[2]

Impact on Attitudes and Personal Growth

As indicated earlier, the project advisory committee was interested in the impact of the program on employee attitudes toward themselves, the company and learning itself. It was the advisory committee that pushed for offering classes that addressed some of the special interests of the employees, which the workers could attend on their own time.

In the evaluation interviews, this interest in the employees beyond their job performance was confirmed, as company managers, community representatives and members of the instructional team were asked to describe the results they hoped would come out of the program. The top managers, in particular, placed as much emphasis on employee self esteem and level of satisfaction with the company as they did on improvement in skills and productivity.

Four of the six managers interviewed, when asked what results had actually been realized, thought that there had been a positive change in attitude. "There is a reduced 'we' and 'they' feeling," commented one of them.

Supervisory and technical personnel were asked, "Have you seen any changes in employee attitude as a result of the program?" and were asked to give an example if they said yes. Their responses were less positive than those regarding improvement in job performance. As Table VI on the next page shows, nine of the fifteen respondents (60%) said there had been no improvement in attitude at all.

Supervisory and technical personnel often followed their assessment with a comment such as, "The attitude is pretty bad, but you have to understand how the working conditions are around here. How can you have a good attitude when it's 2000 degrees?"

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[2]Sticht, Thomas G., "Evaluating National Workplace Literacy Programs," Applied Behavioral & Cognitive Sciences, Inc., El Cajon, California, 1991, p. 9.

Others' Perception of Improved Attitude						
	N	ALL IMPROVED	MOST IMPROVED	SOME IMPROVED	A FEW IMPROVED	NONE IMPR.
SUPERINTENDENTS & SUPERVISORS	10	1	1	2	1	5
TECHNICAL & QUALITY	*5			1		4
TOTAL	15	1	1	3	1	9

*The figures in this table represent the numbers of persons who gave each response. Each person rated the program's impact on employees that they observed. (*2 who responded "don't know" were excluded.)*

TABLE VI

Those who perceived some positive impact on attitude cited more conscientiousness about checking parts, more willingness to learn, and appreciation for the company trying to help. Two mentioned that their people had positive feelings about the training program itself. "Mine all want to go," said one; "They get upset when they think they'll miss out" [e.g., shift changes, snow days].

Both instructors sensed a gradual change in attitude toward them and the training program as time went on. In a few cases, intense worker hostility and reticence developed into trust and openness. Rapport generally evolved, even when workers retained their disinterest in the program itself.

Participants were asked, "What did you expect at the beginning of the program," with choices of "I expected it to be pretty bad," "I expected it to be pretty good," and "I didn't know what to expect." They were then asked if it had turned out better than, about the same, or worse than expected.

The vast majority (81%) said they didn't know what to expect. Ten percent (10%) expected it to be good, and 7% expected it to be bad. In the end, 73% said it was as good as or better than they expected. Only 5% found it to be as bad as or worse than expected. (The remainder enigmatically reported they didn't know what to expect and that it turned out about the same.)

When asked if the training program helped them outside of their job (Table VII), 62% said "yes, a little," or "yes, quite a bit." The highest proportion of positive responses on this question came from the day shift (71%) and the assembly department (67%).

Program Helped Outside of My Job					
	N	% YES QUITE A BIT	% YES A LITTLE	TOTAL % YES	% NO NOT VERY MUCH
ALL PARTICIPANTS	193	18	44	62	37
MIDNIGHT	62	11	47	58	42
AFTERNOON	48	15	38	53	48
DAY	83	25	46	71	29
ASSEMBLY	67	19	48	67	33
FORGE	68	13	49	62	38
HEAT TREAT	36	25	28	53	47
OTHER	22	18	45	63	36

TABLE VII

An indicator of attitude toward learning is the number who availed themselves of special programs on their own time. Options were independent study (computer assisted instruction), GED classes, CPR/First Aid, financial planning, and a drywall class taught by the instructor on the weekend.

As shown in Table VIII, one or two programs were attended by 26% of the respondents; no one reported attending more than two. The day shift (37%), the heat treat department (33%), and the category of other (32%) had the highest attendance at the voluntary programs. The midnight shift had the lowest participation rate (15%). There is no way to tell if these levels of participation reflect a change in attitude toward learning.

Attendance at Voluntary Programs				
	N	% ATTENDED 3-5	% ATTENDED 1-2	% ATTENDED 0
ALL PARTICIPANTS	193	0	26	74
MIDNIGHT	62	0	15	85
AFTERNOON	48	0	21	79
DAY	83	0	37	63
ASSEMBLY	67	0	21	79
FORGE	68	0	25	75
HEAT TREAT	36	0	33	66
OTHER	22	0	32	68

TABLE VIII

Impact of the Project on Productivity and Costs

Winamac Spring monitored such productivity and cost indicators as absenteeism, turnover rates, accident frequency and severity, and input-output ratios throughout the course of the project. Overall, the trends on most indicators were positive. However, caution is in order in the interpretation of the figures. The establishment of the educational program was only one of many events that occurred during the time period. Among the other changes were improvements in the wages of hourly workers, a round of layoffs, and introduction of a new attendance policy.

A look at productivity (input/output ratios) between June, 1990 and May 1991, shows that the figures for the last four months of this period were lower (better) than at any point in the 12-month cycle.

Absenteeism ranged between 4.4% and 5.7% during five of the first six months of that same period, falling below that only once (2.9% in October). In the second six months, absenteeism ranged between 2.2% and 4.3% for five of the six months, with the best attendance in the last quarter. (It should be noted that the best attendance immediately followed the introduction of the stricter attendance policy.)

Trends were also positive in accident severity and frequency rates. Figures were examined for a sixteen month period from February, 1990, to May, 1991. Classes began in October, 1990, and therefore ran during the second eight-month half of this timeframe.

The accident frequency rates are determined by dividing the number of OSHA recordable accidents x 200,000 by the number of hours worked. The following table shows that the accident frequency rates were lower in the time period when classes were held:

Accident Frequency Rate		
RATE (RANGE)	# MONTHS FEB. '90 - SEPT. '90	# MONTHS OCT. '90 - MAY '91
10-19	0	2
20-29	3	3
30-39	5	3
40-49	2	0

The table shows the number of months that the rate fell within the range. The lower the rate, the more positive the indicator.

TABLE IX

The following table shows a similar pattern for the accident severity rates, which are calculated by dividing the number of lost work days due to accidents x 200,000 by the number of hours worked:

Accident Severity Rate		
RATE (RANGE)	# MONTHS FEB. '90 - SEPT. '90	# MONTHS OCT. '90 - MAY '91
100-199	1	4
200-299	3	4
300-399	3	0
400-499	0	0
500-599	1	0

The table shows the number of months that the rate fell within the range. The lower the rate, the more positive the indicator.

TABLE X

Other Findings

A few other observations were made which did not fit within the major questions and issues raised for the evaluation.

Involvement of Supervisory Personnel

In the evaluation interviews, many of the plant superintendents and supervisors had only a vague idea of the purpose, content and expected results of the program. Many did not remember being contacted or being told that they could sit in on classes. Most indicated they would like to have been consulted or better informed.

Supervisors were asked, "What is your understanding of the purpose of the program?" Responses tended to be either very general (e.g., "education," "help people on what they lack") or narrowly specific ("math," "rulers," "first aid," "tools"). Three of ten knew that the program involved teaching basic skills. One said he did not know what the program was about.

Supervisors who knew that the program involved a specific subject tended to be those who had been individually consulted by the instructor for information; they generally knew little about the program's content beyond that one subject, however. Four of the ten supervisors said they had been consulted about a particular subject. Three others said that a memo or questionnaire had been sent around at some point. Three said there had been no opportunities for input.

The biggest problem that the supervisors identified as being caused by the program was the difficulty of scheduling workers. Most said that they worked the problems out, and several complimented the instructors for their cooperation. One commented that the problem was worse during times of layoffs and recalls. One said it was less disruptive when his entire shift went to class than when he had to accommodate individualized study (computer) sessions. Most felt that they were still responsible for maintaining smooth operations and productivity. One flatly said that he wouldn't let his workers go if he felt he needed them.

In general, supervisors those who conveyed a sense of respect and appreciation for their employees also appeared to have better communications with them, tended to know more about the program, and tended to say that the program had helped the workers in their job performance. Four of the ten fell into this category.

The remaining supervisors questionned whether some workers could learn or change, and believed that some employees attended the program because it gave them a break from the floor. This group tended to know less about the program and to believe it had not helped much, compared to the other group of supervisors.

A few of the supervisors stated that they felt like they themselves needed more training; their tone and body language indicated that there were some sore feelings over the attention being paid to the hourly workers.

When asked what training should be provided for supervisors, the following responses were given:

Working with people/supervision (5)
Computers (2)
Business
Goal setting
Hazardous materials
SPC

Despite their criticisms and skepticism, eight of the ten supervisors thought the program should be continued; one said "maybe," and one said "no." Suggestions for the program were:

Teach more math (4)
Focus on basic reading, writing (3)
SPC/Quality (3)
Computers (2)
Problem solving/taking initiative (2)
Relate program more to needs on the floor (2)
Involve the supervisors more (2)
Send only the people who will benefit
Hold the program after the shift
Teach budgets on their own time
Manners/respect
Confidence building

Other comments included:

Instructors complimented (4)
People like the training room

Involvement of Technical and Quality Personnel

Seven technical/quality staff were interviewed using the same instrument as the superintendents and supervisors. In general, a higher proportion (four of seven) of the technical group said they had had some involvement in program planning; of those that said they had not, only one indicated he would have liked to.

Two respondents said they did not have enough direct contact with the hourly workers to comment on performance or attitudes. None of this group had had direct problems as a result of the program; two had "heard" that scheduling was a problem.

Responses of this group to the question about the program purpose were very similar to those of the supervisors: two did not know, two responded generally in terms of "education," three mentioned a specific subject ("fractions," "tapes, mics, gauging"), while one was quite knowledgeable about the scope of the program.

The technical group seemed somewhat less interested in training being provided for themselves. Courses that they were interested in were:

Computers (2)
Typing
College classes
SPC

Six of seven thought the program should be continued; one said "maybe." Their suggestions for the program were:

Math (4)
Charting/SPC (2)
GED (2)
Problem solving (2)
Heat treat
Reading tapes
Make the program more visible

Managers' Suggestions for Change or Improvement

All of the management personnel interviewed felt that the program should be continued. Four of the six said that they had been involved in program development.

When asked if there had been any problems with the program, two mentioned scheduling, two said that the goals and purposes of the program had not been adequately communicated at the beginning of the program, and one mentioned the early negative newspaper publicity. One commented that supervisors had not been involved enough, and one thought that top management should have been more active in the planning.

When asked what changes they would make in the program if it were continued, they responded as follows:

Basic skills as refresher/for new employees (3)
More job-related advanced technology (2)
GED/high school diploma (2)
Completing time cards
Team building
Add classes for supervisors (SPC, management)

Participant Recommendations

When asked whether they would recommend the program to a friend or co-worker, 73% of the participants responded "yes," 5% "no," and 22% said "not sure/maybe."

More than 100 suggestions were given in response to the question, "What other classes do you think the program should offer?" Responses given more than once were:

More about specific jobs in department/ company/my job (9)
Computer training/programming (9)
More independent study/computer work (8)
How to check own parts/QC/SPC (7)
More on measurements/calipers (6)
Basic math/advanced math (6)
Employee rights and benefits (5)
More on safety (5)
First aid (4)
Electrical wiring (3)
Business management (2)
Getting along/working together (2)
English (2)
Mechanics (2)
More on metals (2)

When asked "If you could change one thing about this program, what would it be?," 51 individuals (26% of questionnaire respondents) said they would have liked more class time or more in-depth coverage of subjects. Many commented that one class session was inadequate to learn the material.

Fifteen respondents said that they would change "nothing" about the program. Seven wanted grouping of participants by specialty or by how much they already knew on the subject. Four wanted to be able to smoke in class.

Fifteen individuals added that they thought the teachers and/or the class was very good.

CONCLUSIONS

Based on the evaluation findings, the major conclusions reached were:

1. Project Winamac was conducted in a manner consistent with the purpose and requirements of the National Workplace Literacy Program, which was established to provide grants to exemplary partnerships of business, industry or labor organizations and educational organizations to improve the productivity of the workforce through the improvement of literacy skills.

2. Project Winamac met a sufficient number of its stated objectives to characterize it as a qualified success. Changes from the written plan (proposal) were made thoughtfully and deliberately in the face of conditions encountered during implementation.

3. There is insufficient evidence concerning the actual impact of the program on the general literacy skills of the Winamac Spring hourly work force. Standardized testing was suspended because of the hostile response toward it from the participants, who were mandated to attend the program. Pre-post unit testing in the latter stages of the program did show substantial gains in short-term mastery of course material.

   Participants who functioned at the most basic levels were not as well served in the heterogeneous group instructional setting as they might have been with individualized instruction.

4. Both employee self-reports and supervisor assessments indicate that there were improvements in job performance as a result of the program; the improvements, however, appear to be limited in scope and pervasiveness.

5. There were positive trends in all of the productivity and cost measures examined. It is likely that the training program contributed to those trends, but a number of other changes in workplace conditions that could have contributed took place during the same time period.

6. The project had negligible impact on employee attitudes in the opinion of supervisors and technical personnel, who were the persons with the most direct and frequent contact with the workers. However, because supervisors perceived that they had been insufficiently involved in or informed about the program, and since the supervisors were responsible for resolving any problems that resulted from work schedule disruptions, this finding could be more reflective of supervisor-employee relations than employee attitudes per se.

7. Although the program may not have had the intended impact upon overall work attitudes, it appears that positive attitudes did develop toward the training program and the instructors. The vast majority of participants said the program turned out to be better than they had expected, and almost one-third took part in optional programs for which wages were not paid.

8. Regardless of perceived benefits, limitations or problems, a high percentage of all of the parties involved with the project -- management, supervisory and technical personnel, employees, advisory committee representatives, the educational team, and the workers themselves -- advocated the continuation of the program.

9. The training component of the program deserves special commendation. The curriculum was completely customized to meet the assessed skill needs of the participants as they were applied on the various jobs throughout the plant. Instruction was focused on mastery of the specific competencies needed on those jobs. The wide variety of instructional materials and strategies used included video, text, worksheets, diagrams, hands-on demonstrations, and computer-assisted instruction.

   In the absence of job task analyses, good use was made of other available assessment information, quality improvement targets, and "informants" from among the plant specialists and supervisors in order to develop the curriculum. The instructors were able to overcome negative participant attitudes and bad initial publicity as well as a grueling schedule to establish an excellent rapport with the participants and other plant personnel.

10. The commitment of Winamac Spring to the project was substantial. Use of released time for training not only represented a large investment in terms of wages, but posed real problems in the scheduling of personnel and maintenance of regular plant operations. In addition, the company built a permanent new training facility for hourly personnel just off the plant floor, and involved top managers -- including the company president -- in project implementation.

11. Both the instructors and the plant managers believed that the impact of the project was just beginning to felt toward the end of the grant period, and considered that the time invested had been necessary simply to win the confidence and trust of the workers. A decision was made to continue the program using company funds, representing a major new commitment to the ongoing development of the hourly workforce.

RECOMMENDATIONS

Recommendations for the Winamac Spring program are:

1. Individualize the training.

   Since the company intends to continue the program but without the same level of resources that was available with the federal grant, and assuming some basis must be determined for deciding which of the hourly workers will participate, it may be an opportune time to consider how training needs can be addressed on more of an individualized basis (which can include homogenous groupings of personnel).

   Many companies have initiated training with smaller numbers of individuals on a voluntary basis. Often, volunteers must agree to participate in a formalized assessment process. The initial volunteers tend to be those at the higher end of the skill continuum; in fact, they can be selected from among the top scorers. Those not selected for the initial group are not "rejected," but rather are put on a waiting list.

   This can work to the advantage of the employer, because these individuals often progress rapidly, experience success, and convey their satisfaction to their peers. This encourages new volunteers as space becomes available. The later entrants can be provided with more time, and if necessary, special assistance or tutoring.

   Some of the participants wished to be able to work more in specialized groupings by job or department. This idea also has merit, since literacy skills are better retained the more closely they mirror those used on the job -- a result of the repeated practice that naturally occurs.

2. Find meaningful ways to involve supervisors in the planning process.

   Although there may be difficulties to be resolved to enable supervisors to be more involved in the planning and implementation of the training program, the benefits to be gained include knowledgeable input from those in the best position to observe the workers from day to day, and possibly a more supportive attitude toward the training.

   One common problem in situations where the basic skills of workers are relatively low is that neither the employees nor supervisors truly believe that workers have the necessary intelligence or motivation to learn. Winamac Spring should consider visiting or exchanging information with a company which shares similar characteristics but has overcome these

very problems, such as the Cumberland Hardwoods program in Tennessee, recipient of a national literacy award for its exceptional progress.

3. <u>If possible, retain the element of independence inherent in educational services being provided by an educational agency.</u>

A Winamac Spring administrator commented that an outside agency was used to deliver training only because of the federal requirement to do so, but that in the end this factor proved to be an important element in the program's success.

With an independent provider, employees can have some assurance that classroom performance will not adversely affect job security. A climate of trust and confidentiality can improve the opportunities to obtain and use needed assessment data in the development and evaluation of instructional strategies. It may also help preserve the focus on meeting training objectives.

Winamac Spring was considering an independent contractual arrangement with the instructor, which would be one way to implement this recommendation.

It is also recommended that Winamac Spring retain an informal linkage with the El-Tip-Wa Adult Learning Center after its funding relationship ends. A lone instructor at the work site will need some degree of continued professional peer support.

4. <u>Continue to demonstrate to Winamac Spring employees that the impending workforce changes are real and that there are benefits to be reaped from increased capacity on the job.</u>

It is common for workers to doubt the magnitude and seriousness of changes taking place in today's work environment. Efforts to implement new ideas may be greeted with fear, suspicion and defensiveness. For that reason, employees must perceive that there are rewards for their cooperation and adaptation.

In interviews with management, past practices and conditions that lead to less than optimal relations with workers were readily acknowledged. However, there were also examples cited to show that management was attempting to remedy those situations. The training program was specifically undertaken as a strategy to develop and retain existing human resources.

Success breeds success in these endeavors. If training contributes to the success of the company and the advancement of its employees, both productivity and trust will increase.

APPENDICES

Winamac Spring Manager Interview Guide

1. To start out, I'd like to have your correct title..Tell me about your specific responsibilities here at Winamac Spring.

2. Why was this education program needed? How could you tell that some of the employees needed skill upgrading?

3. What specific results did you hope would come out of providing this program?

4. What do you think the most significant results have been?

5. This program is called a workplace literacy partnership. As one of the partners, how would you describe the role of Winamac Spring? Who are the other partners, and what has each contributed?

6. If you could turn back the clock knowing what you know now, is there anything you would do differently?

7. What changes do you see coming in your industry in the next 3-5 years that will have implications for the quality of your workforce? How can your company best prepare for those changes?

8. What advice would you give to someone from a similar company who was just starting to organize a program like this?

9. Do you think there is a need to continue this program? Are there changes you will make if it is continued? How will you make up for the absence of the federal grant?

10. Is there anything else you'd like to say that I didn't ask you about?

Winamac Spring Supervisor Interview Guide*

1. What do you do here at Winamac Spring?

2. How many years have you worked here? Did you have any other jobs for the company before being made supervisor?

3. What is your understanding of the purpose of the program?

4. Did you have some involvement in the development of the education program or the individual courses? [If yes]..Please tell me about that. [If no]..Would you have liked to?

5. When the education program started, did you think it would help the workers that you supervise? [If yes]..How did you think it would help?

6. Would you say it ended up helping all of them, most of them, some of them, a few, or none?..Can you give me examples of improvements you have noticed in individual work performance that you think this were a result of the program?

7. Have you seen any changes in employee attitude as a result of the program? [If yes]..Please give me an example.

8. I understand that some classes were open to supervisors. Did you participate?..Why/Why not?

9. Have there been any problems with the program for you or your department? [If yes]..What were they? How could that be helped or prevented in the future?

10. If it were up to you, would you keep this program going? If it did continue, are there some things you would change? What?

11. If the program continues, what other classes should be offered for your employees? For you?

12. Is there anything else you'd like to say that I haven't asked you about?

**This instrument was used with supervisors, superintendents, and technical/quality personnel.*

Winamac Spring Instructor Interview Guide

1. As a member of the instructional team, what are your specific responsibilities?

2. What qualifications, experience, and training have you had to prepare you for this responsibility?

3. What is your understanding of the purpose of the program?

4. What specific results did you hope would come out of providing this program?

5. What do you think the most significant results have been? [How could you tell/What do you base that on?]

6. This program is called a workplace literacy partnership. As one of the partners, how would you describe the specific role of El-Tip-Wa? Who are the other partners, and what has each contributed?

7. Please describe the curriculum of the program. To what extent are you incorporating the specific literacy skills needed by the participants on the job? How did you determine what skills were required? Were participants involved in curriculum decisions?

8. How did you assess the needs of the individual participants in relation to the required skills? Did you use individual educational plans? How did you handle differences in the levels of knowledge and skills among employees?

9. What impact has the program had on the literacy skill development of the participants? What evidence do you have?

10. What impact has the program had on the job performance of the participants? What evidence do you have?

11. Have you seen any changes in participant attitudes as a result of the program? What changes have you observed?

12. Did you encounter any unanticipated difficulties of a serious nature? How did you resolve the problem?

13. If you could turn back the clock knowing what you know now, is there anything you would do differently?

14. What advice would you give to someone from a similar company who was just starting to organize a program like this?

15. Do you think there is a need to continue this program? Are there changes you will make or recommend if it is continued?

16. Is there anything else you'd like to say that I haven't asked you about?

Winamac Spring Community Representative Guide

1. To start out, I'd like to make sure I have your correct title and spelling of your name.

2. What has been your specific involvement in the project? [If advisory board] Can you give me an example or two of suggestions that have been made by this committee? Were any of these suggestions implemented, to your knowledge?

3. Why was this education program needed, in your opinion?

4. What specific results did you hope would come out of providing this program?

5. What do you think the most significant results have been?

6. How visible has this program been in the community? Should it be more visible? What ideas do you have for creating greater awareness?

7. Do you think there is a need to continue this program? Are there changes you would recommend if it is continued?

8. [for KVWD rep] About how many Winamac spring employees have been referred to you? What type of service did you provide? What have the results been?

9. [for KVWD rep] I understand that your agency is involved in special workplace literacy initiatives. To what extent have your other efforts been coordinated with this project? Are you satisfied with the current extent of coordination?

10. Is there anything else you'd like to say that I haven't asked you about?

Winamac Spring Participant Questionnaire

1. How long have you worked at Winamac Spring?

____ less than 1 year
____ 1-2 years
____ 3-5 years
____ 6-10 years
____ more than 10 years

2. What is your age group?

____ 18-25 years
____ 26-35 years
____ 36-50 years
____ 50-65 years
____ 65+ years

3. What department do you work in now?

____ assembly
____ heat treat
____ forge
____ set-up/machine shop
____ maintenance

4. What is your work shift?

____ day ____ afternoon ____ midnight

5. Which of the following classes did you attend <u>on company time</u> at Winamac Spring? (check all that apply)

____ safety
____ caliper reading
____ SPC
____ hazardous materials
____ measurement
____ quality manual
____ blueprint reading
____ heat treat
____ independent study

6. Which of the following classes did you attend <u>on your own time</u> (check all that apply)

____ GED preparation
____ independent study
____ other (write in answer)_____
____ CPR/first aid
____ financial planning

7. Has this program helped you do your job better?

____ yes, quite a bit
____ yes, a little
____ no, not very much

8. Has the class helped you outside of your job?

____ yes, quite a bit
____ yes, a little
____ no, not very much

9. Are there some things you can do better now than you did before taking the class? If so, what are they?

10. How do you rate this program?

____ very interesting to me
____ somewhat interesting
____ pretty boring

11. How hard was the program for you?

____ too hard for me
____ just about right for me
____ too easy for me

12. What did you expect at the beginning of the program?

____ I expected it to be pretty bad
____ I expected it to be pretty good
____ I didn't know what to expect

...and how did it turn out?

____ it was better than I expected
____ it was about the same as I expected
____ it was worse than I expected

13. Would you recommend this program to a friend or co-worker?

____ yes
____ no
____ not sure/maybe

14. What other classes do you think the program should offer?

15. If you could change anything about this program, what would it be?

16. You may write any other comments you have here.

THANK YOU!!